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10/510,183

09/30/2004

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10/02/2008

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EXAMINER

MOWLA, GOLAM

ART UNIT

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1795

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/510,183 | Applicant(s) RANSQUIN ET AL. | |
| | Examiner GOLAM MOWLA | Art Unit 1795 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Pre-Appeal Conference

1. The prosecution is reopened in view of the decision made on the Pre-Appeal Conference on 09/17/2008. However, Applicant's argument presented in the Pre-Brief Conference request does not place the Application in condition for allowance.
2. Claims 1-9 are currently pending.

Status of the Rejections

3. The rejection from the previous office Action mailed on 02/25/2008 are withdrawn in view of the decision made in the Pre-Appeal Conference on 09/17/2008. New ground(s) of rejection under 35 U.S.C. 103 is/are presented below.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 209 as shown in fig. 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the

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filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 116 (page 3, line 24-32) and 306 (page 4, lines 26-31). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because it recites the limitation "the photoelectric cell" in line 5. There is insufficient antecedent basis for this limitation in the claim. Claims 2-9 are indefinite as these claims depend on claim 1.

Claim 4 is indefinite because it recites the limitation "the voltaic cell" in line 3. There is insufficient antecedent basis for this limitation in the claim. Claims 5 and 6 are indefinite as these claims depend on claim 4.

Claim 5 is indefinite because it recites "the transparent layer" in lines 1-2. It is not clear whether the Applicant is referring to the transparent protection layer which covers the photovoltaic cell (as claimed in claim 1) or the layer which forms the filter (as claimed in claim 4). If Applicant is referring to the transparent protection layer which covers the photovoltaic cell (as claimed in claim 1), then claim 5 is indefinite because it recites "exterior face" in line 2, which lacks antecedent basis. On the contrary, if the Applicant is referring to the layer which forms the filter (as claimed in claim 4), then claim 5 is also indefinite because the limitation "the transparent layer" in lines 1-2 lacks antecedent basis.

Claim 6 is indefinite because it recites "the transparent layer" in line 2. It is not clear whether the Applicant is referring to the transparent protection layer which covers the photovoltaic cell (as claimed in claim 1) or the layer which forms the filter (as claimed in claim 4). If Applicant is referring to the transparent protection layer which

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covers the photovoltaic cell (as claimed in claim 1), then claim 5 is indefinite because the limitation "exterior face" in line 2 lacks antecedent basis. On the contrary, if the Applicant is referring to the layer which forms the filter (as claimed in claim 4), then claim 5 is also indefinite because the limitation "the transparent layer" in line 2 lacks antecedent basis.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1-5 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osborn et al. ("Spectral selectivity applied to hybrid concentration systems", as cited in previous office action) in view of Olah (US 6399874). Supporting evidence is provided by Matsushita (US PG PUB 2008/0186587).

In regard to claim 1, Osborn discloses a concentrator (Fresnel lens or other reflecting concentrator; see fig. 6 and 18; see also pages 305 and 318) photovoltaic generator (as shown in fig. 6 or 18), comprising at least one photovoltaic cell (see fig. 6 on page 305 or fig. 18) and a reflecting concentrator (Fresnel lens or other reflecting concentrator; see fig. 6 and 18; see also pages 305 and 318). Osborn further discloses the use of a filter (beamsplitter as shown in fig. 6 or 18) to eliminate in the luminous flux reflected by the concentrator (Fresnel lens or other reflecting concentrator; see fig. 6 and 18; see also pages 305 and 318) toward the photovoltaic cell most of the "unwanted" radiation that is not able to excite the photovoltaic cell (page 311; see also fig. 18 on page 315).

Osborn discloses that the concentrator is reflective type concentrator (see page 318). In addition, Examiner also notes that Fresnel lens is also a reflecting concentrator (see fig. 3 and [0032] of Matsushita in which the solar radiation R1 is concentrated by Fresnel lens 15 and then reflected back to the diffuser plate 14).

Osborn is silent as to whether the photovoltaic cell is covered by a transparent protection layer.

Olah discloses a photovoltaic concentrator (solar concentrator; see abstract) wherein the photovoltaic cell (28; see fig. 3; col. 3, lines 4-22) is covered by a transparent protection layer (transparent protective cover 38; see fig. 3; col. 3, lines 12-14). Olah covers the photovoltaic cell with a transparent protection layer to protect it from elements (see col. 3, lines 12-14).

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It would have been obvious to one of ordinary skill in the art at the time of the invention to have used the transparent protection layer of Olah in the concentrator photovoltaic generator of Osborn to protect the photovoltaic cell from elements, as shown by Olah.

Although Osborn discloses the use of a filter (beamsplitter) to eliminate in the luminous flux reflected by the concentrator (Fresnel lens) toward the photoelectric cell most of the "unwanted" radiation that is not able to excite the photovoltaic cell (page 311), Osborn is silent as to whether the concentrator (Fresnel lens) is covered by the filter (beamsplitter).

One of ordinary skill in the art realizes that "the use of a one piece construction instead of the structure disclosed in the prior art would be merely a matter of obvious engineering choice." See MPEP §2144.04 V-B. See also *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). Therefore, it would have been obvious to one of ordinary skill in the art to have used one piece construction by placing the filter of Osborn on the concentrator of Osborn instead of the structure (two separate pieces) disclosed by Osborn as it is merely a matter of obvious engineering choice to allow for one piece construction which enhances handling reliability.

Regarding claim 2, Osborn further discloses that the filter is formed of a layer made from materials (cobalt salts) absorbing the "unwanted" portion of the radiation (pp. 311-312).

Regarding claim 3, Osborn further discloses that the layer forming the filter is of constant thickness (as shown in Figure 18, cobalt salts/liquid filter is contained in a glass channel and therefore has to be of constant thickness) (pp. 303, 312 and 315).

Regarding claims 4 and 7, Osborn further discloses that the filter is formed of a layer (glass substrate or superstrate of the filter; see page 305) whose exterior face is oriented to divert this "unwanted" radiation out of the voltaic cell (as shown in Figure 6 the unwanted radiation is diverted to the photothermal converter).

Regarding claim 5, Osborn further discloses that the exterior of the transparent layer is of decreasing thickness so that it is not parallel to the reflecting surface of the concentrator (as shown in Figure 6 the exterior face of the layer which forms the filter is not parallel with the reflecting surface of the concentrator).

Regarding claims 8 and 9, Osborn further discloses that the reflecting concentrator (Fresnel lens or other concentrator; see pages 305 and 318) reflects incident light toward said photoelectric cell (see Figure 6).

11. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osborn in view of Olah as applied to claim 4 above, and further in view of Leinkram (US 3839108, as cited in previous office action).

Applicant is directed above for complete discussion of Osborn in view of Olah with respect to claim 4, which is incorporated herein. Osborn further discloses a filter to the hybrid solar energy conversion device (as shown in fig. 6 and 18) (pages 305 and 318), but fails to disclose that the exterior face of the transparent layer forming the filter is etched to form Fresnel steps.

Leinkram discloses Fresnel lens to receive solar radiation (col. 1, lines 15-19) and further discloses the method of etching the exterior face of the transparent layer to form Fresnel steps (col. 4, lines 65-68). Also, Leinkram teaches that the precision in the disclosed etching method allows to construct a theoretically ideal Fresnel zone plate (col. 5, lines 7-11).

It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the etching methods as taught by Leinkram to the hybrid solar conversion device of Osborn in order to construct a theoretically ideal Fresnel lens/zone plate and therefore increase the reflection.

Response to Arguments

12. Applicant's arguments filed on 08/25/2008 have been fully considered but moot in view of new ground(s) of rejection.

Applicant also argues that "claim 1 explicitly defines "unwanted" radiation as radiation "that is not able to excite the photovoltaic cell" (see page 2 of Pre-Appeal Brief Request for Review).

This argument is persuasive and moot in view of new ground(s) of rejection provided above.

Applicant argues that “examiner has not been able to point to anything that corresponds to the claims transparent protection layer that covers the photovoltaic cell and is separate from the filter which covers the reflecting concentrator” (see page 3 of Pre-Appeal Brief Request for Review).

This argument is persuasive and moot in view of new ground(s) of rejection provided above.

Applicant also argues that “claim 1 requires a reflecting concentrator. Osborn does not teach this. The examiner refers to the Fresnel lens as being a reflecting concentrator, but everyone of skill in the art knows that a Fresnel lens concentrates by transmission, not reflection” (see page 3 of Pre-Appeal Brief Request for Review).

The Examiner respectfully disagrees. Osborn indeed teaches reflecting type concentrator (see page 318 which shows that the concentrator can be refractive and reflective). In addition, Examiner also notes that Fresnel lens is indeed a reflecting concentrator as discussed above. See also US 2008/0186587, fig. 3 and [0032] in which the solar radiation (R1) is concentrated by Fresnel lens (15) and then reflected back to the diffuser plate (14). Therefore, Fresnel lens inherently is a reflecting type concentrator.

Correspondence/Contact Information

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to GOLAM MOWLA whose telephone number is (571) 270-5268. The examiner can normally be reached on M-F, 0900-1700 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ALEXA NECKEL can be reached on (571) 272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/G. M./
Examiner, Art Unit 1795

/Alexa D. Neckel/
Supervisory Patent Examiner, Art Unit 1795